ABSTRACT

A method of manufacturing *n*-type semiconductor diamond by the present invention is characterized in producing diamond incorporating *Li* and *N* by implanting *Li* ions into, so that 10 ppm thereof will be contained in, single-crystal diamond incorporating 10 ppm or more *N*, or else, in doping single-crystal diamond with *Li* and *N* ions, by implanting the ions so that ion-implantation depths at which the post-implantation *Li* and *N* concentrations each are 10 ppm or more will overlap, and thereafter annealing the diamond in a temperature range of from 800°C or more to less than 1800°C to electrically activate the *Li* and *N* and restore the diamond crystalline structure. In the present invention, *n*-type semiconductor diamond incorporates, from the surface of the crystal to the same depth, 10 ppm or more of each of *Li* and *N*, wherein its sheet resistance is 10^7 Ω/□ or less.